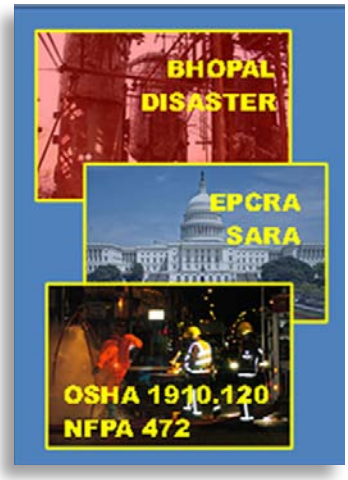
Coffee Break Training – Hazardous Materials

The Bhopal Disaster

No. HM-2013-1 July 8, 2013

Learning Objective: *Students shall be able to understand the link between the Bhopal disaster and hazardous materials planning and response.*

The single event that dramatically changed America's hazardous materials response capability and provided the foundation for the current modern approach to hazardous material preparedness was a chemical disaster that happened halfway around the world in the town of Bhopal, India, in 1984.



Disasters may lead to legislation which in turn leads to regulations that may impact response protocols.

Union Carbide operated a pesticide plant in the city of Bhopal, in the Indian state of Madhya Pradesh. In 1984, the plant had ceased operations but still had full tanks of chemicals that were dormant but not properly attended. During the evening of Dec. 3, 1984, a valve broke and a large amount of water entered a tank containing 42 tons of methyl isocyanate. The chemical reaction increased the tank's temperature to over 200 degrees Celsius, subsequently releasing a large amount of toxic gas. Methyl isocyanate is extremely toxic to humans, even in limited exposure. It attacks the respiratory tract and the eyes and can cause immediate asphyxiation, blindness and death.

That night, a toxic cloud spread over the sleeping city of Bhopal with a devastating impact on the population. In all, it is estimated that 10,000 people died within 72 hours of the accident. Since then, 25,000 have died from different gas-related diseases. Several hundred thousand people suffered permanent damage, lifelong illnesses and birth deformities, and continue to suffer the aftermath to this day. The Bhopal disaster is often referred to as the world's worst industrial tragedy. It is truly one of the most devastating accidents in modern history.

In the United States, public officials and Congress became alarmed when similar releases occurred in Union Carbide plants in West Virginia shortly after Bhopal. Although the releases in West Virginia were in isolated areas and did not have the same effect, Congress was very concerned that an incident like Bhopal could happen in the U.S. So, in 1986, Congress passed the Emergency Planning and Community Right-to-Know Act. The law is also sometimes referred to as the Superfund Amendments and Reauthorization Act of 1986. In EPCRA, Congress created controls that were intended to prevent an incident like Bhopal from happening in the U.S. and established systems to provide better information to citizens about chemical risks in industries in local communities.

EPCRA was also a milestone for the emergency response community. In EPCRA, Congress established the first national legislative requirements designed to ensure that the nation's emergency services had sufficient levels of preparedness and training to deal with an incident of this magnitude and for the first time mandated training and competency for emergency responders to hazardous materials releases. EPCRA led Occupational Safety and Health Administration to establish Hazardous Waste Operations and Emergency Response, the responder competency and training regulation that has provided the foundation for emergency response to hazardous materials incidents.

EPCRA also mandated many important new programs to build a foundation for better public protection from hazardous materials incidents. It required the Environmental Protection Agency to establish a list of extremely hazardous substances. It created State Emergency Response Commissions and Local Emergency Planning Commissions to provide public access to reports from producers on the manufacture, storage and use of these substances. There are many other important pieces of legislation that have contributed to the higher standard of care for hazardous materials response that we currently provide, including the Clean Water Act of 1970, the Resource Conservation and Recovery Act of 1976, the Comprehensive Emergency Response, Compensation and Liability Act of 1980, and the Clean Air Act of 1990.

All of these legislative and regulatory actions started with worldwide concern over the Bhopal disaster. As a result the current competencies for each of the many roles and jobs in hazardous materials response are well defined in standards that have their roots in EPCRA and the disaster at Bhopal. These standards are the 1989 regulation OSHA 29 CFR 1910.120 and the current edition of the National Fire Protection Association 472, *Standard for Competence of Responders to Hazardous Materials/ Weapons of Mass Destruction Incidents*. These standards are the foundation for the current modern approach to and understanding of the full range of competencies and resource capabilities needed across the nation for safe and effective response to hazardous materials emergencies.